

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,774,491 B2
APPLICATION NO. : 09/887049
DATED : August 10, 2004
INVENTOR(S) : Kie Y. Ahn

Page 1 of 3

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete the title page and substitute therefor the attached title page.

On the Title Page

Page 2 Item -56- OTHER PUBLICATIONS, please delete "V. Lehrmann," before "The Physics" and insert --V. Lehmann--.

Delete Drawing Sheet 6 of 6 and substitute therefor Drawing Sheet 6 of 6 as shown on attached page.

In the formal drawings, sheet 6 of 6. Please see attached correct drawing sheet.

Col. 1, line 9, please delete "Continuation" after "is a" and insert --Divisional--.

Col. 5, line 4, claim 1, please insert --suspended-- after "from and".

Col. 5, line 19, claim 1, please delete "suspend" before "between" and insert --suspended--.

Col. 5, line 19, claim 1, please delete "members-" after "terminal" and insert --members--.

Col. 6, line 10, claim 14, please insert --suspended-- after "from and".

Col. 8, line 36, claim 32, please delete "32" after "claim" and insert --31--.

This certificate supersedes the Certificate of Correction issued May, 27, 2008.

Signed and Sealed this

First Day of July, 2008



JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) **United States Patent**
Ahn

(10) Patent No.: **US 6,774,491 B2**
(45) Date of Patent: **Aug. 10, 2004**

(54) **CONDUCTIVE LINES, COAXIAL LINES, INTEGRATED CIRCUITRY, AND METHODS OF FORMING CONDUCTIVE LINES, COAXIAL LINES, AND INTEGRATED CIRCUITRY**

4,870,470 A 9/1989 Bass, Jr. et al. 257/324
4,933,743 A 6/1990 Thomas et al. 257/742
4,939,568 A 7/1990 Kato et al. 257/686

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

EP 0501407 A1 * 2/1992 H01L/23/52
EP 0771026 A2 * 10/1996 H01L/21/768
EP 0338190 A2 * 4/1998 H01L/21/90
JP 4-153472 5/1992

OTHER PUBLICATIONS

Merriam-Webster Online, <http://www.m-w.com/home.htm>.

Thomas, M.E.; Saadat, I.A.; Sekigama, S.; VLSI Multilevel Micro-Coaxial Interconnects For High Speed Devices, Electron Devices Meeting, 1990. Technical Digest., International, Dec. 9-12, 1990, pp. 55-58.*

(List continued on next page.)

(75) Inventor: **Kie Y. Ahn, Chappaqua, NY (US)**

(73) Assignee: **Micron Technology, Inc., Boise, ID (US)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/887,049**

(22) Filed: **Jun. 21, 2001**

(65) **Prior Publication Data**

US 2002/0009844 A1 Jan. 24, 2002

Related U.S. Application Data

(63) Continuation of application No. 08/917,003, filed on Aug. 20, 1997, now Pat. No. 6,294,455.

(51) Int. Cl.⁷ **H01L 23/48; H01L 23/52**

(52) U.S. Cl. **257/773; 257/522; 257/642; 257/619; 438/411; 438/619**

(58) Field of Search **257/522, 642, 257/619, 773, E23.013, 758; 438/411, 412, 619, 422, 421, 466, 623, 625, 626, 611; 29/840**

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,982,268 A 9/1976 Anthony et al. 257/45
4,394,712 A 7/1983 Anthony 361/779
4,419,150 A 12/1983 Soclof 438/337
4,440,973 A 4/1984 Hawkins 174/107
4,595,428 A 6/1986 Anthony et al. 438/468
4,610,077 A 9/1986 Minahan et al. 438/66
4,776,087 A 10/1988 Croun et al. 29/626

Primary Examiner—George Fourson

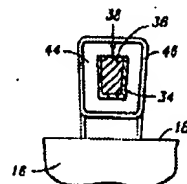
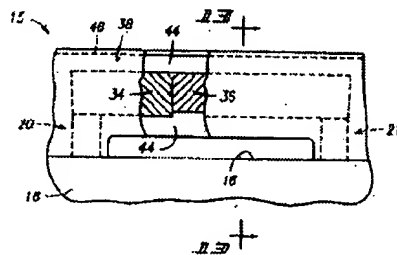
Assistant Examiner—Julio J. Maldonado

(74) Attorney, Agent, or Firm—Wells St. John P.S.

(57) **ABSTRACT**

Conductive lines, such as co-axial lines, integrated circuitry incorporating such conductive lines, and methods of forming the same are described. In one aspect, a substrate having an outer surface is provided. A masking material is formed over the outer surface and subsequently patterned to form a conductive line pattern. An inner conductive layer is formed within the conductive line pattern, followed by formation of a dielectric layer thereover and an outer conductive layer over the dielectric layer. Preferred implementations include forming the inner conductive layer through electroplating, or alternatively, electroless plating techniques. Other preferred implementations include forming the dielectric layer from suitable polymer materials having desired dielectric properties. A vapor-deposited dielectric layer of Parylene is one such preferred dielectric material.

32 Claims, 6 Drawing Sheets



U.S. Patent

Aug. 10, 2004

Sheet 6 of 6

6,774,491 B2

